(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



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(43) International Publication Date 12 February 2004 (12.02.2004)

PCT

(10) International Publication Number WO 2004/012837 A3

(51) International Patent Classification⁷: A01N 1/02, G01N 1/30, 33/48, C07K 1/00, A61B 17/43, A61D 7/00

(21) International Application Number:

PCT/US2003/024460

(22) International Filing Date: 1 August 2003 (01.08.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/400,971

1 August 2002 (01.08.2002) U

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:

US Filed on 60/400,971 (CIP) 1 August 2002 (01.08.2002)

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- (81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE

(utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TI, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NI., PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to the identity of the inventor (Rule 4.17(i)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 19 August 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

2004/012837 A

(54) Title: LOW PRESSURE SPERM CELL SEPARATION SYSTEM

(57) Abstract: A sperm cell process system providing to generate sperm cell insemination samples having controlled sperm cell fertility characteristics of sperm cells.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/24460

A. CLAS IPC(7) US CL	SIFICATION OF SUBJECT MATTER : A01N 1/02; G01N 1/30, 33/48; C07K 1/00; A : 435/2, 40.51; 530/827, 852; 600/33, 35	.61B 1	7/43, A61D 7/00	
	International Patent Classification (IPC) or to both n	nations	al classification and IPC	
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Documentation	on searched other than minimum documentation to th	e exte	nt that such documents are include	d in the fields searched
	ta base consulted during the international search (nar EDLINE, EMBASE, BIOSIS, LIFESCI	me of	data base and, where practicable,	search terms used)
C. DOC	UMENTS CONSIDERED TO BE RELEVANT	_		
Category *	Citation of document, with indication, where a			Relevant to claim No.
Y	PENFOLD, L.M. et al. Comparative Motility of X Sperm Separated on teh basis of DNA Content. Mo 50, pages 323-327, see entire document.			1-16, 24, 25, 27, 28, 30, 31, 39-54, 58-60
¥	BEYHAN, $\mathbb Z$. et al. Sexual Dimorphism in IVM-IVF Bovine Embryos Produced From X and Y CHromosoms-Bearing Spermatozoa Sorted by High Speed Flow Cytometry. Theriogenology. 1999, Vol. 52, pages 35-48, see entire document.			1-16, 23-25, 27, 28, 30, 31, 33, 34, 36, 37, 39-61
Y	RATHI, R. et al. Evaluation of In Vitro Capacitation of Stallion Spermatozoa. Biology of Reproduction. 2001, Vol. 65, pages 462-470, see entire document.			1-9, 17-24, 26, 27, 29, 30, 32, 33, 35, 36, 38, 41-61
Y BUCHANAN, B.R. et al. Insemination of Mares wi or Sexed Spermatozoa. Theriogenology. 2000, Vol. document.		with L ol. 53,	ow Numbers of Either Unsexed pages 1333-1344, see entire	1-9, 17-24, 26, 27, 29, 30, 32, 33, 35, 36, 38, 41-61
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priority date claimed Date of the actual completion of the international search		Date of mailing of the international search report		
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P.O. Box 1450			phone No. 708-308-0196	WWW/
	o. (703)305-3230		1	V
	A/210 (second sheet) (July 1998)			/